



Parkinson's Disease: Understanding the Environment and Gene Connection

**Co-sponsored by the National Institute of Environmental Health Sciences
and the National Institute of Neurological Disorders and Stroke**

November 3-4, 2014

Monday, Nov. 3, 8:30 a.m. – 5:00 p.m.

Tuesday, Nov. 4, 8:30 a.m. – noon

**NIEHS Building 101, Rodbell Auditorium
Research Triangle Park, N.C.**

This page left intentionally blank



Parkinson's Disease: Understanding the Environment and Gene Connection

Co-sponsored by the National Institute of Environmental Health Sciences
and the National Institute of Neurological Disorders and Stroke

November 3-4, 2014

Monday, Nov. 3, 8:30 a.m. – 5:00 p.m.

Tuesday, Nov. 4, 8:30 a.m. – noon

NIEHS Building 101, Rodbell Auditorium
Research Triangle Park, N.C.

National Institutes of Health
U.S. Department of Health and Human Services

This page left intentionally blank

Table of Contents

Welcome 1

Agenda 2

Biographies 5

Participants 20

This page left intentionally blank

Parkinson's Disease: Understanding the Environment and Gene Connection

Co-sponsored by the National Institute of Environmental Health Sciences and the National Institute of Neurological Disorders and Stroke



Welcome Message from Linda Birnbaum and Walter Koroshetz



Welcome to the conference, "Parkinson's Disease: Understanding the Environment and Gene Connection," sponsored by the National Institute of Environmental Health Sciences (NIEHS) and National Institute of Neurological Disorders and Stroke (NINDS).

Parkinson's disease (PD) is a progressive neurodegenerative disorder estimated to affect 500,000 people in the United States, with about 60,000 new cases diagnosed each year. While the exact cause of PD is unknown, most researchers agree that the disease is caused by the interactions between genetic susceptibility and environmental exposures, and that the study of both these factors may lead to promising new targets for intervention and prevention.



In January 2014, NINDS sponsored the conference, "Parkinson's Disease 2014: Advancing Research Improving Lives" which resulted in prioritized recommendations for advancing basic, translational, and clinical research in the field. To more fully explore the role of the environment in the cause of PD, NIEHS and NINDS have organized this conference with the primary goal of seeking consensus on, and prioritizing, research recommendations that focus on environmental contributors and their interplay with genetic susceptibility in the development and onset of PD. You will be hearing from a stellar group of experts over the next two days who will walk us through the breadth of basic, epidemiological, and clinical research that is being conducted.

On behalf of NIEHS and NINDS, we would like to thank the many people who helped make this conference possible, especially conference co-chairs Carlie Tanner, Marc Weisskopf, Michael Lee, and Gary Miller. Additionally, we want to thank all the working group and panel members who have generously dedicated many hours of their time to this effort.

We are especially pleased to have representatives from academia, industry, government, and non-profit and advocacy organizations with us to each share their unique perspectives. It is our hope that this conference will build off the last one, and catalyze advances in Parkinson's research. Thank you for your active participation.

Linda Birnbaum

Linda Birnbaum, NIEHS Director

Walter J. Koroshetz

Walter Koroshetz, NINDS Acting Director

Parkinson's Disease: Understanding the Environment and Gene Connection

Co-sponsored by the National Institute of Environmental Health Sciences and the National Institute of Neurological Disorders and Stroke

November 3-4, 2014 | NIEHS Building 101, Rodbell Auditorium | Research Triangle Park, N.C.

AGENDA

MONDAY, Nov. 3, 2014

8:30 a.m. **Registration**

9:00 a.m. **Welcome**

Linda Birnbaum, *National Institute of Environmental Health Sciences (NIEHS)*
Walter Koroshetz, *National Institute of Neurological Disorders and Stroke (NINDS)*

9:25 a.m. **Review of NINDS Workshop Recommendations**

Beth-Anne Sieber, *NINDS*

9:35 a.m. **Goals for Meeting**

Jonathan Hollander, *NIEHS*

Session 1: Clinical and Epidemiology Workgroup: Themes and Recommendations

9:45 a.m. **Overview of Themes**

Caroline Tanner, *University of California, San Francisco*

10:00 a.m. **THEME 1: Opportunities to Identify Environmental Factors Affecting Prodromal Parkinson's Disease**

10:00–10:10 a.m. Presenter: Honglei Chen, *NIEHS*

10:10–10:25 a.m. Discussants: Honglei Chen, *NIEHS*

Brad Racette, *Washington University in St. Louis*

Xuemei Huang, *Penn State Milton S. Hershey Medical Center*

Freya Kamel, *NIEHS*

Key Recommendations Associated: 1. Progression Before Diagnosis; 7. Prevention

10:25 a.m. **Break**

10:40 a.m. **THEME 2: Opportunities to Identify Environmental Factors Influencing Disease Progression After Diagnosis**

10:40–10:50 a.m. Presenter: Brad Racette, *Washington University in St. Louis*

10:50–11:05 a.m. Discussants: Brad Racette, *Washington University in St. Louis*

Xuemei Huang, *Penn State Milton S. Hershey Medical Center*

Alberto Ascherio, *Harvard School of Public Health*

Freya Kamel, *NIEHS*

Key Recommendations Associated: 2. Progression After Diagnosis; 5. Combined Exposures

11:05 a.m. **THEME 3: Opportunities to Identify Biomarkers (Exposure, Diagnosis, Progression)**

11:05–11:15 a.m. Presenter: Jeffery Vance, *University of Miami*

11:15–11:30 a.m. Discussants: Jeffery Vance, *University of Miami*

George Mellick, *Griffith University*

Freya Kamel, *NIEHS*

Alberto Ascherio, *Harvard University*

Key Recommendations Associated: 3. Biomarkers; 5. Combined exposures

Parkinson's Disease: Understanding the Environment and Gene Connection

Co-sponsored by the National Institute of Environmental Health Sciences and the National Institute of Neurological Disorders and Stroke

11:30 a.m. **THEME 4: Opportunities to Identify Risk Factors**

11:30–11:40 a.m. Presenter: George Mellick, *Griffith University*
11:40–11:55 a.m. Discussants: George Mellick, *Griffith University*
Jeffery Vance, *University of Miami*
Alberto Ascherio, *Harvard University*
Honglei Chen, *NIEHS*

Key Recommendations Associated: 4. Risk Factors; 6. Sample Size/Pooling

11:55 a.m. **Summary and Presentation of Initial Prioritization of Recommendations**

Marc Weisskopf, *Harvard School of Public Health*

12:05 p.m. **Open Discussion of Priority and Content**

Caroline Tanner, *University of California, San Francisco*
Marc Weisskopf, *Harvard School of Public Health*

12:30 p.m. **Lunch, NIEHS Cafeteria**

1:30 p.m. **Public Comment**

Session 2: Basic and Mechanistic Workgroup: Themes and Recommendations

2:00 p.m. **Overview of Themes**

Importance of Systematic and Unbiased Analysis of Environmental Chemicals
Gary Miller, *Emory University*

2:20 p.m. **THEME 1: Impact Environmental Chemicals on Known Genetic Abnormalities in Parkinson's Disease (Alpha-synuclein, LRRK2, DJ-1, PINK1); Appropriate In Vitro and In Vivo Models**

David Standaert, *University at Alabama-Birmingham*
Matthew Farrer, *University of British Columbia*

2:45 p.m. **THEME 2: Impact of Environmental Chemicals on Known Parkinson's Disease Pathways (Mitochondria, Protein Processing, Synaptic Biology); Appropriate In Vitro and In Vivo Models**

John Elsworth, *Yale University*
Richard Myers, *Boston University*
Jau-Shyong Hong, *NIEHS*

3:10 p.m. **Break**

3:25 p.m. **THEME 3: Measuring Environmental Chemicals in Human and Animal Samples; Sampling, Archiving, Testing, and Data Analysis**

Jeff Johnson, *University of Wisconsin*
Anumantha Kanthasamy, *Iowa State University Center for Advanced Neurotoxicology*

3:50 p.m. **Summary and Presentation of Initial Prioritization of Recommendations**

Identifying and Using the Most Appropriate Model Systems to Study Parkinson's Disease Pathways and Targets with Broad Sharing of Experimental Data
Michael Lee, *University of Minnesota*

4:05 p.m. **Open Discussion of Priority and Content**

Gary Miller, *Emory University*
Michael Lee, *University of Minnesota*

4:45 p.m. **Day 1 Summary and Closing Comments**

Cindy Lawler, *NIEHS*

5:00 p.m. **Adjourn for the Day;** buses back to hotel

6:30 p.m. **Dinner:** Page Road Grill

Parkinson's Disease: Understanding the Environment and Gene Connection

Co-sponsored by the National Institute of Environmental Health Sciences and the National Institute of Neurological Disorders and Stroke

TUESDAY, Nov. 4, 2014

8:00 a.m. **Registration**

8:45 a.m. **Session 3: Panel Discussion: Integrating Parkinson's Disease Environmental Research Across Disciplines**

Moderator: Cindy Lawler, *NIEHS*

Panelists: Caroline Tanner, *University of California, San Francisco*

Marc Weisskopf, *Harvard School of Public Health*

Gary Miller, *Emory University*

Michael Lee, *University of Minnesota*

Beate Ritz, *University of California at Los Angeles*

Anumantha Kanthasamy, *Iowa State University Center for Advanced Neurotoxicology*

Objective: This session will include basic and clinical researchers to discuss challenges and opportunities for advancing research on Parkinson's disease (PD) and environment through interdisciplinary research approaches. Questions to be addressed include:

- How do the research recommendations address the need for a coordinated, interdisciplinary approach?
- What are the best examples of improved understanding of PD environmental risks that were made possible through interdisciplinary approaches?
- What are the key ingredients needed to develop and maintain interdisciplinary collaborations?
- What new strategies could be considered to support interdisciplinary collaborations in the current fiscal climate?

10:00 a.m. **Break**

10:15 a.m. **Session 4: Panel Discussion: Translation of Basic and Clinical Findings to Practice and Policy**

Moderator: Kimberly Gray, *NIEHS*

Panelists: Allison Willis, *University of Pennsylvania Perelman School of Medicine*

Jeff Bronstein, *Ronald Reagan UCLA Medical Center*

Jamie Tucker, *Parkinson's Action Network*

Julie Sacks, *American Parkinson Disease Association*

Susan Gerbeth-Jones, *Parkinson's Disease Foundation*

Peter Schmidt, *National Parkinson Foundation*

Objective: This panel will bring together PD patients, patient advocates, physician scientists, and research funders to share their perspective on communicating and acting on science linking environmental exposures and PD. Questions to be addressed include:

- What is/are the role(s) of PD environmental health researchers in translating and communicating their research findings to affected individuals and families, advocates, policy makers, and the general public?
- How do we know when evidence is sufficient to recommend action at an individual and/or public health level?
- How do we communicate uncertainty (e.g., when the link between an exposure and risk of PD is inconsistent among studies or the evidence is incomplete)?

11:45 a.m. **Concluding Remarks**

Gwen Collman, *NIEHS*

12:00 p.m. **Adjourn**

National Institutes of Health • U.S. Department of Health and Human Services



Biographies

Alberto Ascherio

Harvard School of Public Health and Harvard Medical School

Alberto Ascherio, M.D., Dr.P.H., is a professor of epidemiology and nutrition at the Harvard School of Public Health and a professor of medicine at the Harvard Medical School. Ascherio trained in internal medicine at the University of Milan, and subsequently practiced medicine and public health in Latin America and Africa. He completed his doctoral degree in epidemiology at the Harvard School of Public Health.

Ascherio's research is primarily devoted to finding the causes of multiple sclerosis (MS), Parkinson's disease (PD), and amyotrophic lateral sclerosis (ALS). Since 1997, he has directed the investigation of neurodegenerative diseases in several large cohorts. Among the most notable discoveries to which he has contributed are the key roles of infection with the Epstein-Barr virus, vitamin D insufficiency, and cigarette smoking as risk factors for MS, the importance of vitamin D status as a determinant of MS progression, the role of caffeine consumption and urate as negative risk factors for PD and of urate elevation as a promising therapeutic strategy, and the identification of positive and negative environmental risk factors for ALS.

His ongoing research includes a study in Finland on the relation between vitamin D levels during pregnancy and MS risk in mothers and their offspring, a longitudinal investigation integrating vitamin D status and other environmental determinants of MS progression with genetic factors, and the search of diagnostic and prognostic biomarkers for PD and ALS.

Debra Babcock

National Institute of Neurological Disorders And Stroke

Debra Babcock, M.D., Ph.D., is currently program director for the behavioral and cognitive neuroscience program at the National Institute of Neurological Disorders and Stroke (NINDS). This program supports basic neuroscience research on aspects of cognition (memory, learning, spatial processing, etc.), translational and clinical approaches to understanding cognition, and improvements in measurements to assess cognition (e.g., neuroimaging). She is also a member of the NINDS Parkinson's Disease Working Group and the Parkinson's Disease Biomarker Program. Prior to serving at NINDS, Babcock served as a program director and interim branch chief at the National Institute of Mental Health in the area of translational neuroscience.

Babcock received her doctorate in psychology from Rush University and her master's degree from the University of Illinois, completing her neurology residency at the University of Chicago. She subsequently spent several years doing basic neuroscience research under Dennis Choi, M.D., Ph.D., at Washington University in St. Louis. She also received training in movement disorders there and served as the medical advisor to the St. Louis Chapter of the Huntington's Disease Society of America. Babcock continues to see patients with neurological disorders at the Walter Reed National Military Medical Center.

Linda Birnbaum

National Institute of Environmental Health Sciences

Linda Birnbaum, Ph.D., is the director of the National Institute of Environmental Health Sciences of the National Institutes of Health, and director of the National Toxicology Program.

A board certified toxicologist, Birnbaum has served as a federal scientist for over 34 years. Birnbaum has received many awards and recognitions, including the Women in Toxicology Elsevier Mentoring Award, the Society of Toxicology Public Communications Award, Environmental Protection Agency (EPA) Health Science Achievement Award and Diversity Leadership Award, the National Center for Women's 2012 Health Policy Hero Award, Breast Cancer Fund Heroes Award, and 14 Science and Technology Achievement Awards, which reflect the recommendations of EPA's external Science Advisory Board, for specific publications. Birnbaum was also elected to the Institute of Medicine of the National Academies, and received an honorary degree from Ben-Gurion University in Israel.

Birnbaum is a former president of the Society of Toxicology, the largest professional organization of toxicologists in the world; former chair of the Division of Toxicology at the American Society of Pharmacology and Therapeutics; and former vice president of the American Aging Association. She is the author of more than 700 peer-reviewed publications, book chapters, and reports. She is also an adjunct professor at several universities, including the University of North Carolina at Chapel Hill and Duke University.

A native of New Jersey, Birnbaum received her master's degree and doctorate in microbiology from the University of Illinois at Urbana-Champaign.

Jeff Bronstein

University of California, Los Angeles

Jeff Bronstein received his bachelor's degree from the University of California, Berkeley and his master's degree and doctorate from University of California, Los Angeles (UCLA) as a recipient of the Medical Scientist Training Program Award. He completed a residency in neurology and fellowship training in movement disorders at UCLA and at Queens Square in London. Bronstein also completed a postdoctoral fellowship in molecular biology before being appointed an Assistant Professor of Neurology in 1994, Director of the Movement Disorders Program at UCLA in 1996, Professor of Neurology in 2006, and Professor of Molecular Toxicology in 2007. His clinical interests include the management of Parkinson's disease (PD) and other movement disorders, surgical treatment of PD, and developing new therapies for patients. Bronstein's research interests include the study of the causes of PD (environmental and genetic) using cell and zebrafish models as well as population-based studies. His research is supported by the NIH, Veterans Administration, and private foundations. Bronstein is the principle investigator of one of six Parkinson's Disease Research, Education and Clinical Center's at the Veterans Administration Medical Center.

Honglei Chen

National Institute of Environmental Health Sciences

Honglei Chen, M.D., Ph.D., is a senior investigator and the head of the Aging and Neuroepidemiology Group at the National Institute of Environmental Health Sciences (NIEHS), a division of the National Institutes of Health (NIH) in the United States. Chen earned his doctorate in nutritional epidemiology from Tufts University in 2001 and received his postdoctoral training at the Harvard School of Public Health. He joined NIEHS as a tenure-track investigator in 2005 and was promoted in 2013. Chen has conducted research on Parkinson's disease (PD) in several large prospective cohorts, most recently in the NIH-AARP Diet and Health Cohort and the Atherosclerosis Risks in Communities Study. His research aims to understand the genetic and environmental risk factors for PD, and the non-motor symptoms in the prodromal stage of Parkinson's. Chen has published over a hundred original research papers that cover a wide range of topics on potential risk factors and non-motor symptoms of PD, including examples on topics such as smoking, exercise, ibuprofen use, plasma urate, daytime sleepiness, and depression.

Gwen Collman

National Institute of Environmental Health Sciences

Gwen Collman, Ph.D., is director of the National Institute of Environmental Health Sciences (NIEHS) Division of Extramural Research and Training where she leads approximately 60 professional staff in areas of scientific program administration, peer-review, and the management and administration of about 1,500 active grants each year. She directs scientific activities across the field of environmental health sciences including basic sciences (i.e., DNA repair, epigenetics, environmental genomics), organ-specific toxicology (i.e., reproductive, neurotoxicology, respiratory), public health-related programs (i.e., environmental epidemiology, environmental public health), and training and career development. She also oversees the implementation of the Superfund Research Program and the Worker Education and Training Program.

Prior to her current role, Collman served in program development and management, beginning in 1992 as a member, then as chief of the Susceptibility and Population Health Branch. During this time, she directed research on the role of genetic and environmental factors on the development of human disease, from animal models of genetic susceptibility to population studies focusing on etiology and intervention. She was responsible for building the NIEHS grant portfolio in environmental and molecular epidemiology, and developed several complex multidisciplinary research programs. These include the NIEHS Breast Cancer and the Environment Research Centers Program, the NIEHS/EPA Centers for Children's Environmental Health and Disease Prevention, and the Genes, Environment and Health Initiative. Also, under her guidance, a team created a vision for the Partnerships for Environmental Public Health programs for the next decade.

In recognition of her achievements, she is the recipient of numerous NIEHS Merit Awards, two NIH Director's Awards, and the Department of Health and Human Services Secretary's Award for Distinguished Service. Collman received her doctorate in environmental epidemiology from the University of North Carolina School of Public Health where she was awarded the 2009 H.A. Tyroler Distinguished Alumni Award.

John Elsworth
Yale School of Medicine

John Elsworth, Ph.D., is a senior research scientist in the Department of Psychiatry at Yale University School of Medicine in New Haven, Connecticut. He received his doctorate in biochemistry from the University of London, England. His work focuses on understanding the dysfunction of dopamine neurons that occurs in Parkinson's disease and schizophrenia, and devising strategies for overcoming the deficits. He has a particular interest in the varying susceptibility of dopamine neurons to damage at different stages of life and the impact of environmental exposures during development. Elsworth's work utilizes in vitro work and animal models, employing pharmacological, gene therapy and stem cell approaches.

Matthew Farrer
University of British Columbia

Professor Matthew Farrer, Ph.D., currently directs the Centre for Applied Neurogenetics ([CAN](#)), which conducts multidisciplinary research to accelerate the development of novel therapeutics for patients with neurological disease. Before accepting his position as Canada Excellence Research Chair in Neurogenetics and Translational Neuroscience at University of British Columbia, Farrer was a professor of molecular neuroscience and director of the Division of Neurogenetics at Mayo Clinic, Jacksonville, Florida. In 2008, he was named a Mayo Clinic Distinguished Investigator, the Clinic's highest award for research excellence, for his outstanding contributions to neurogenetics and translational neuroscience.

Farrer has made several influential discoveries in neurogenetics and is critically acclaimed for his work on the genetics of Parkinson's disease. Subsequent studies in model development and characterization have helped define the biologic systems perturbed, and have laid the foundation for new and effective therapies. Farrer has published more than 300 papers and has an H-index of 61. Farrer received his doctorate in human genetics from Imperial College London, United Kingdom, and a bachelor's degree in biochemistry from King's College London, United Kingdom. His thesis studies focused on brain disorders, namely age-associated cognitive dysfunction in Down syndrome, and the complex trait genetics of trisomy 21. He was also a postdoctoral fellow in medical and community genetics at the Kennedy-Galton Centre of Medical and Community Genetics, St. Mark's Hospital, Harrow, U.K.

Susan Gerbeth-Jones
Parkinson's Disease Foundation

Susan Gerbeth-Jones grew up a Hoosier with her three sisters in South Bend, Indiana, and settled in North Carolina with her husband, Paul, in 1980. Her educational background is a mix of horticulture, which she studied at Purdue University, and botany, which she studied at the University of North Carolina at Chapel Hill. She has also studied South African grasses with a scanning electron microscope in a research lab at Duke University.

When microcomputers first came on the scene, she was fascinated with all that could be automated in the lab. Her desire to explore and learn technology quickly became a passion and the career path she would take. As technology became more prolific, she enjoyed not only the learning challenge but also teaching people how to use programs and facilitating their choice of particular tools to more efficiently accomplish their work. At the time of her retirement, she was the assistant dean of technology in the Nicholas School of the Environment at Duke University. She feels very blessed to live in "a little house in the big woods," spend time with her husband, two daughters, two dogs, three cats, and a dozen or so chickens. She's the choir director of a small group of adults at church and also enjoys gardening, cooking, knitting, and quilting. Susan became a Parkinson's Disease Foundation Research Advocate in 2012. She has participated in several Parkinson's disease drug trials, organized Duke's 10th Parkinson's Symposium, served as an advisor to researchers on device design and continues to educate her community about the importance of PD research.

Jonathan Hollander

National Institute of Environmental Health Sciences

Jonathan Hollander, Ph.D., is a program director in the Genes, Environment, and Health Branch at the National Institute of Environmental Health Sciences (NIEHS). Hollander received his doctorate from the Behavioral Neuroscience Program (formerly Biological Program) in the psychology department at the University of North Carolina at Chapel Hill (UNC-CH) in 2006. Prior to joining the Division of Extramural Research and Training of the NIEHS, he was a staff scientist in the Molecular Therapeutics and Neuroscience Departments at The Scripps Research Institute (TSRI) of Florida. His research background includes the use of genetic, behavioral, electrophysiological, and pharmacological methods to study drug addiction and obesity. As part of a joint fellowship with UNC-CH, Hollander also worked in the neurotoxicology branch of the Environmental Protection Agency, where he studied the neurodevelopmental effects of polychlorinated biphenyl (PCB) exposure. During his tenure at the EPA, UNC-CH, and TSRI, he was successful in obtaining NIH fellowship and early career awards, and played a key role in developing and implementing new research programs in the aforementioned areas.

Hollander is responsible for basic mechanistic grants in Parkinson's disease and a portion of the neurodevelopmental toxicology portfolio. In addition, he manages grants that focus on applications of brain imaging techniques.

Jau-Shyong (John) Hong

National Institute of Environmental Health Sciences

Jau-Shyong Hong, Ph.D., heads the neuropharmacology group within the Laboratory of Neurobiology at NIEHS/National Institutes of Health. His research interest for the past 15 years has focused on the role of neuro-inflammation in the pathogenesis of Parkinson's disease, and developing novel therapeutic agents. His central hypothesis is that activation of microglia, as induced by xenobiotics and endogenous factors released during neuronal injury, may self-perpetuate resulting in a sustained, low-grade neuroinflammation that leads to gradual oxidative neurodegeneration of dopaminergic neurons and thus Parkinsonism. To date, Hong has published over 370 peer-reviewed articles in leading biomedical journals and has written more than 50 book chapters.

Xuemei Huang

Penn State Milton S. Hershey Medical Center

Xuemei Huang, M.D., Ph.D., graduated from Beijing Medical University, Beijing, in 1987 and earned her doctorate in neuropharmacology and toxicology from Purdue University in 1994. After a fellowship in clinical pharmacology at the University of Colorado School of Medicine, and a medical internship in the University of Washington program, she completed her residency training in neurology at the University of North Carolina (UNC) School of Medicine in 2000. She then went to Emory University for fellowship training in movement disorders in 2001, after which she joined the faculty of the University of North Carolina School of Medicine as an assistant professor in 2002. At UNC, she started the first movement disorders clinic, and developed a patient-based translational research program. From 2006-2008, she was acting chief of the Division of Movement Disorders, and director of the National Parkinson's Foundation Center of Excellence. In 2008, she moved Penn State Milton S. Hershey Medical Center, where she is now professor and vice chair for research in the Department of Neurology, and also holds appointments in pharmacology, radiology, neurosurgery, and kinesiology. She is also the co-director for the Center for Movement Disorders at Penn State Milton S. Hershey Medical Center. Her research focuses on multidisciplinary imaging-related approaches to understanding both etiology and neural mechanisms of neurodegenerative diseases and the mechanisms by which drugs work. She has been a consultant for the National Institute of Environmental Health Sciences since 2007 and is a frequent reviewer for the National Institutes of Health (NIH). She has been funded by the NIH since 2002, and has published more than 80 original peer-reviewed research papers, dozens of chapters and research letters, and one patent.

Jeffrey Johnson
University of Wisconsin

Jeffrey Johnson, Ph.D., received his master's degree in pharmacology in 1986 and his doctorate in environmental toxicology from the University of Wisconsin in 1992. Upon receiving his doctorate in 1992, Johnson began a postdoctoral fellowship in molecular neuroscience/pharmacology at the University of Washington in Seattle. After three years of postdoctoral training in molecular neuroscience/pharmacology at the University of Washington in Seattle, Johnson began his appointment as an assistant professor at the University of Kansas Medical Center in the fall of 1995. He was subsequently recruited back to the University of Wisconsin in the summer of 1999, promoted to associate professor in 2003, and professor in 2007. His laboratory is focused on a neuroprotective pathway called the Nrf2-ARE pathway. Activation of this pathway leads to increased expression of a cluster of genes that confer dramatic protection against oxidative stress-induced cell death. Since oxidative stress plays a primary role in the progression of many neurodegenerative diseases, including Alzheimer's disease, Parkinson's disease, Huntington's disease, and Lou Gehrig's disease, Johnson's laboratory showed that cells genetically engineered to have increased levels of Nrf2 could protect neurons from oxidative stress-induced cell death. The importance of the Nrf2-ARE pathway is being evaluated using genetically engineered mice, transplantation of genetically engineered stem cells, viral-mediated gene therapy, and drug screening.

Freya Kamel
National Institute of Environmental Health Sciences

Freya Kamel received her bachelor's degree in mathematics from Brandeis University and her doctorate in biological sciences from State University of New York, Binghamton, New York. She did research in neuroendocrinology as a postdoctoral fellow at the Rockefeller University and then as an assistant professor at the Rockefeller University and the University of Wisconsin. She received a master's of public health in epidemiology from the University of North Carolina at Chapel Hill. She joined the epidemiology branch at the National Institute of Environmental Health Sciences in 1989, and currently serves as an epidemiologic consultant for the National Toxicology Program, an associate editor of the American Journal of Epidemiology, and a member of the editorial board of Environmental Health Perspectives. Kamel's research interests focus on environmental determinants of neurologic dysfunction and disease, in particular, neurodegenerative disease.

Robert Kane
Georgetown University

Robert Kane, Ph.D., is a neuropsychologist board certified by the American Board of Professional Psychology. He has served as the tech lead for neurosciences and program manager for the Neurotoxin Exposure Treatment Parkinson's Research program at the U.S. Army Telemedicine and Advanced Technology Research Center (TATRC) Fort Detrick, Maryland. He is a research associate professor in the Department of Neurology at Georgetown University School of Medicine and an adjunct associate professor at the University of Maryland School of Medicine. Prior to joining TATRC he was the manager for the Neurocognitive Assessment Tool program at the Defense and Veterans Brain Injury Center. Kane is also a member of the Washington Neuropsychology Research Group. Previously, he served as the director of Neuropsychology for the Veterans Affairs Maryland Health Care System and associate director of Telehealth for the Veterans Affairs Multiple Sclerosis Center of Excellence East. He has an extensive background in neuropsychology and in automated neuropsychological assessment. He serves as a consultant to the National Aeronautics and Space Administration's medical operations at Johnson Space Center and has been a consultant to the U.S. Army Medical Research and Materiel Command in Fort Detrick, Maryland. He is currently part of the Congressionally Directed Medical Research Program at Fort Detrick.

Anumantha Kanthasamy
Iowa State University

Anumantha Kanthasamy, Ph.D., is a distinguished professor and the Eugene and Linda Lloyd Endowed Chair of Neurotoxicology in the Department of Biomedical Sciences in the College of Veterinary Medicine, Iowa State University (ISU). He is also the chair of the biomedical sciences department and the founding director of the Iowa Center for Advanced Neurotoxicology. He served as the chair for the ISU Interdepartmental Toxicology Graduate Program for eight years. Prior to joining ISU, he was a faculty member in the departments of neurology, and community and environmental medicine at the University of California, Irvine, California, and a researcher at Purdue University, West Lafayette, Indiana. Kanthasamy's research is focused primarily in the areas of molecular neurotoxicology, cell signaling, metal and pesticide toxicology, and epigenetics. Currently, his research focuses on cellular and molecular mechanisms associated with environmental neurotoxicant-induced cell death signaling and protein aggregation pathways as they relate to the pathogenesis of Parkinson's disease and other protein misfolding diseases including prion diseases.

His research projects have been supported by grants from National Institute of Environmental Health Sciences, National Institute of Neurological Disorders and Stroke (NINDS) and other funding agencies. Kanthasamy has published over 100 research papers and book chapters, and is a frequently invited lecturer at numerous conferences worldwide. At ISU, Kanthasamy teaches toxicology and pharmacology courses to graduate students and veterinary medical students. He regularly serves on several review panels including National Institutes of Health study section review panels and other scientific review committees. Presently, he serves as a regular member of NINDS-NSD-C translational and program project grant review panel. He also maintains memberships in many preeminent professional organizations including the Society for Neuroscience, Society of Toxicology, American Society for Pharmacology and Experimental Therapeutics, and International Society for Neurochemistry. Kanthasamy also served as vice president and then president of the Neurotoxicology Specialty Section of the Society of Toxicology.

Walter Koroshetz
National Institute of Neurological Disorders and Stroke

Koroshetz, M.D., Ph.D., was named acting director of National Institute of Neurological Disorders and Stroke (NINDS) in October, 2014. Prior to this appointment, he served as deputy director of NINDS since January, 2007, where he worked with the NINDS director in program planning and budgeting, and overseeing Institute scientific and administrative functions.

Before joining NINDS, Koroshetz served as vice chair of the neurology service and director of stroke and neurointensive care services at Massachusetts General Hospital (MGH). He was also a professor of neurology at Harvard Medical School and has led neurology resident training at MGH since 1990.

A native of Brooklyn, New York, Koroshetz graduated from Georgetown University and received his medical degree from the University of Chicago. He trained in internal medicine at the University of Chicago and Massachusetts General Hospital. Koroshetz trained in neurology at MGH, after which he did post-doctoral studies in cellular neurophysiology at MGH and the Harvard neurobiology department. He joined the neurology staff, first in the Huntington's disease unit and then in the stroke and neurointensive care service.

As a member of the NINDS intramural review and oversight committees, Koroshetz has been involved in various NINDS symposia and clinical trials, and served as the Institute's representative to the American Neurological Association's Career Development Symposium. He was a member of the NINDS-chaired Brain Attack Coalition, a group of professional, voluntary, and governmental entities dedicated to reducing the occurrence, disabilities, and death associated with stroke.

Cindy Lawler

National Institute of Environmental Health Sciences

Cindy Lawler, Ph.D., is chief of the Genes Environment and Health Branch in the Division of Extramural Research and Training at the National Institute of Environmental Health Sciences (NIEHS). This branch provides programmatic management of research that addresses the fundamental mechanisms by which environmental exposures combine with genetic susceptibility to influence risk of complex human diseases and disorders.

Lawler is the lead NIEHS representative for extramural autism activities. This includes responsibilities as a program official for the National Institutes of Health (NIH)-funded Early Autism Risk Longitudinal Investigation study, the Childhood Autism Risk from Genes and Environment study, the Markers of Autism Risk in Babies-Learning Early Signs, and a multidisciplinary center that addresses environmental contributors to autism. In addition to her programmatic role in autism activities, Lawler has primary responsibility for the NIEHS extramural portfolio of Parkinson's disease epidemiology research. Lawler is also leading a strategic team focused on knowledge management within the Division of Extramural Research and Training as well as a trans-NIH initiative to support community-based data standards development as part of the NIH Big Data to Knowledge program.

Lawler received her doctorate in experimental psychology at Northeastern University and received postdoctoral training in the Brain and Development Research Center at the University of North Carolina at Chapel Hill (UNC-CH). Prior to joining NIEHS, Lawler was a faculty member in the UNC-CH Department of Psychiatry and the Program in Toxicology and held an adjunct appointment in the Department of Biostatistics. She served as a principal investigator on an NIH-supported early career research grant in behavioral neuroscience, with an emphasis on dopamine receptor pharmacology and development of novel pharmacologic agents to treat diseases and disorders related to altered dopamine neurotransmission.

Michael Lee

University of Minnesota

Michael Lee, Ph.D., joined the University of Minnesota (U of M) in 2009. Prior to joining U of M, he was faculty at Johns Hopkins University School of Medicine, from 1995-2009. Lee is known for generating transgenic mouse models of neurodegenerative disease, including Alzheimer's disease (AD) and Parkinson's disease (PD), and using the models to understand disease mechanisms. In particular, Lee is studying how disease-relevant pathology, such as alpha-synuclein aggregation, occurs and leads to neurodegeneration. Lee's group was first to show progressive neurodegeneration in transgenic mouse models of AD and PD. Lee's studies have also identified important pathogenic mechanisms, including aberrant unfolded response, that could be targets for environmental factors and therapy development.

George Mellick
Griffith University

George Mellick obtained his doctorate in medicine from the University of Queensland in 1996. Following postdoctoral research at the Karolinska Institute's Center for Genomics and Bioinformatics, and the University of Queensland, he was appointed lecturer in the University of Queensland School of Medicine in 2004. He joined the Eskitis Institute at Griffith University in 2006 as associate professor and was made deputy director of the Eskitis Institute for Drug Discovery in 2013. He also holds honorary appointments in neurology at the Princess Alexandra Hospital, Brisbane, and the Royal Brisbane and Woman's Hospital, and is an adjunct associate professor at the University of Queensland Centre for Clinical Research.

Mellick is an interdisciplinary scientist who works on all aspects of neurodegenerative disease with an emphasis on Parkinson's disease and related disorders. He has authored over 110 research publications including articles in the Lancet, JAMA Internal Medicine, Lancet Neurology, and Annals of Neurology. Mellick is also an advocate for people affected by PD and has served as the president of Parkinson's Queensland Inc. and on the Parkinson's Australia Board. He also has a major interest in teaching and postgraduate student supervision. He currently lectures in pharmacology, neuroscience, molecular genetics, bioinformatics, and scientific methods and supervises seven doctorate students. In 2006, Mellick won an Australia National Carrick (Education) Award for Programs that Enhance Student Learning.

Gary Miller
Rollins School of Public Health, Emory University

Gary Miller, Ph.D., is the Asa Griggs Candler professor of environmental health and associate dean for research in the Rollins School of Public Health. He received his doctorate in pharmacology and toxicology from the University of Georgia and completed postdoctoral fellowships at Emory University and Duke University. Miller is director of the National Institutes of Health-funded HERCULES P30 Health and Exposure Research Center, a project leader on the Emory Udall Parkinson's Disease Research Center, and director of Emory's National Institute of Environmental Health Sciences-funded Toxicology Training Grant. Miller's honors include the achievement award from the Society of Toxicology, the Outstanding Mentor Award from the Emory Graduate Division of Biomedical and Biological Sciences, and the Georgia Research Alliance Distinguished Investigator Award. He was appointed editor-in-chief of Toxicological Sciences in 2013.

Thomas Montine
University of Washington

Thomas Montine, M.D., Ph.D., received a bachelor's in chemistry from Columbia University, a master's from McGill University, and a doctorate in pharmacology from the University of Rochester. His postgraduate medical training was at Duke University, and he was junior faculty at Vanderbilt University, where he was awarded the Thorne Professorship in Pathology.

Montine is currently the Alvord Endowed Chair in Neuropathology and chair of the Department of Pathology at the University of Washington, where he is professor of pathology and adjunct professor of neurological surgery. He is also an adjunct professor of neurology at Oregon Health and Science University. Montine is the director of the Pacific Northwest Udall Center (one of 10 National Institute of Neurological Disorders and Stroke-funded Morris K. Udall Centers of Excellence for Parkinson's Disease Research) and is the director of the University of Washington Alzheimer's Disease Research Center (one of 15 such National Institute on Aging-funded centers). Both of these national centers perform focused basic and translational research as well as clinical trials. Montine is the director of the Alvord Brain Tumor Center that was initiated with an approximately \$10 million philanthropic gift, and until 2010 was the director of the Division of Neuropathology, which under his leadership attracted over \$35 million in research funding from government and private foundations, and more than doubled its clinical service duties as it trained over 250 students, residents, fellows, and visiting faculty.

Richard Myers

Boston University School of Medicine

Richard Myers, Ph.D., has been affiliated with the Department of Neurology at Boston University School of Medicine since 1980, and in addition to being a professor in the department, Myers is also the director of the Genome Science Institute on the medical campus. His research interests have focused on the application of a wide range of genetic research technologies (molecular genetics, genetic epidemiology, statistical genetics, next generation sequencing, bioinformatics) in the investigation of adult onset diseases with complex etiology (Parkinson's disease (PD), coronary heart disease, obesity, osteoporosis, etc.), and on those with Huntington's disease. He is a member of the team that cloned the huntingtin gene in 1993.

Currently, his lab is engaged in studies of mRNA, microRNA and ChIP-sequencing to elucidate the roles of genes and gene regulation in neurodegeneration with an emphasis on Huntington's disease and PD. His studies implicating the cyclin G-associated kinase gene in alpha-synuclein toxicity in PD models, led to the award of R01-NS076843 (Characterization of the Role of cyclin G-Associated Kinase in Parkinson disease, Myers PI), which focuses on RNA-sequencing in PD brains. He is also engaged in a combined ChIP-sequencing / RNA-sequencing study in Huntington's brains which led to award of R01-NS073947 (Epigenetic Markers in Huntington Disease Brain, Myers PI).

In September 2014, he was awarded a multi-PI project with Rudolf Jaenisch, Ph.D., and Rick Young, Ph.D., of the Whitehead Institute (R01-NS088538-01, An iPSc based platform for functionally assessing genetic and environmental Risk in PD) using stem cell technologies to investigate genes implicated in PD. Finally, in collaboration with Anita DeStefano, Ph.D., Myers is studying the transcriptome in post-mortem brain samples from obese and normal weight individuals to characterize neuroendocrine function in obesity in samples derived from the brain donor programs of the Framingham Heart Study, the Religious Orders Study, and the Rush Memory and Aging studies (R01-DK099269 Obesity Brain Expression).

Brad Racette

Washington University School of Medicine

Brad Racette, M.D., is a professor and vice chairman of neurology at Washington University School of Medicine in St. Louis, and an honorary professor of public health at the University of the Witwatersrand in Johannesburg, South Africa. His research focuses on manganese neurotoxicity, environmental risk factors for Parkinson's disease, and health services studies in PD. His research is supported by the National Institutes of Health, Michael J. Fox Foundation, and the American Parkinson Disease Association. This research includes numerous projects in the U.S., South Africa, and Europe. He is currently the chairman of the Neurologic Aging Musculoskeletal Epidemiology Study Section at NIH and has served as a peer-reviewer for numerous medical journals and international regulatory agencies. He has the recipient of numerous awards and has authored over 120 peer-reviewed publications.

Beate Ritz

University of California, Los Angeles, School of Public Health

Beate Ritz, M.D., Ph.D., is the chair of the Department of Epidemiology at the University of California, Los Angeles (UCLA) School of Public Health with co-appointments in environmental health sciences and neurology at UCLA. Ritz is also a member of the Center for Occupational and Environmental Health and the California Population Research Center. Her primary research interests are the effects of occupational and environmental toxins, mainly pesticides and air pollution, on chronic diseases, with a focus on neurodegenerative and neurodevelopmental disorders Parkinson's disease (PD), cancers, adverse birth outcomes, and childhood diseases, including autism.

She has developed geographic information system-based exposure assessment tools to study health effects of air pollution and of long-term pesticide exposures. Ritz is the principle investigator of numerous PD, environment, and gene-environment epidemiology studies as well as reproductive and childhood outcome studies focusing on environmental toxins. She is the 2007 recipient of the Robert M. Zweig M.D. Memorial Award (Clean Air Award) from the California South Coast Air Quality Management District; a Collegium Ramazzini fellow; has served on multiple Institute of Medicine committees evaluating Gulf War illness; the Environmental Protection Agency Carbon Monoxide National Ambient Air Quality Standards panel; and on the Scientific Review Panel on Toxic Air Contaminants for the state of California.

Julie Sacks

American Parkinson Disease Association

Julie Sacks, a Licensed Clinical Social Worker, oversees the development and implementation of specialized programs and services designed to serve the unique concerns of young people who have been diagnosed with Parkinson's disease, their family members, friends, and healthcare providers.

Sacks joined the American Parkinson Disease Association in 2007 as the National Young Onset Center's first full-time director. Under her leadership, the program has grown dramatically and continues to expand its reach and influence in medical, PD and lay communities.

Sacks has a background in advertising and marketing and received her master's in social work in 1995. She is a Licensed Clinical Social Worker with more than 15 years of experience working with people of all ages to address a wide range of concerns. She is comfortable discussing the physical, psychological, and situational concerns that often accompany PD, and advocates for patients in program and policy initiatives.

Peter Schmidt

National Parkinson Foundation

Peter Schmidt, Ph.D., joined the National Parkinson Foundation (NPF) as chief information officer and vice president of Research and Professional Programs in June 2009, where he is responsible for the Parkinson's Outcomes Project, a longitudinal study of Parkinson's disease to identify best practices in care to achieve optimal patient-reported and clinically measured outcomes. With over 15,000 clinical evaluations of over 7,000 patients, the Parkinson's Outcomes Project is the largest clinical study of PD ever conducted and includes the largest set of patient-reported outcome measures ever collected in a prospective study. Prior to NPF, Schmidt was an investment banker in Norwalk, Connecticut, president of a software company supporting chronic disease management, and chief operation officer of an online education joint venture at Oxford, Stanford, and Yale universities. He is an active member of several trade groups and is widely published in both scientific and trade journals on issues related to medicine, health information technology, and finance. Schmidt earned his bachelor's degree at Harvard University and was awarded his master's and doctorate from Cornell University, Sibley School of Mechanical and Aerospace Engineering, where he studied gait and balance and total joint replacement. He completed a fellowship at the Hospital for Special Surgery in New York City.

Beth-Anne Sieber

National Institute of Neurological Disorders and Stroke

Beth-Anne Sieber, Ph.D., joined National Institute of Neurological Disorders and Stroke (NINDS) in 2007 as a program director in the Neurodegeneration Program Cluster. She received her bachelor's degree in biology and psychology from Rutgers University, after which she received a doctorate in physiology and neurobiology from a joint program between Rutgers and the University of Medicine and Dentistry of New Jersey. Her graduate studies focused on animal and cell culture models of dopamine neuron development and neurotoxicity, with emphasis on utilizing neuropharmacological and neurochemical approaches to determine the roles of neuronal-glia interactions and neurotrophic factors in these processes. She then pursued postdoctoral studies at the Karolinska Institute in Stockholm, Sweden.

While there, she expanded her interest in dopamine neurobiology by utilizing molecular approaches to elucidate the role of neurotrophic factors and receptor tyrosine kinases in cellular and behavioral function in mouse models. Prior to joining the NINDS, Sieber spent over seven years as a program director at the National Institute of Mental Health, where she managed a grant portfolio in developmental neurobiology and co-chaired related efforts for the National Institutes of Health Neuroscience Blueprint. Her current duties at the NINDS include management of a grants portfolio on Parkinson's disease (PD), which includes neurobiological approaches to understand neuronal loss and alterations in circuitry, as well as grants in the areas of deep brain stimulation, non-motor aspects of the disease, and related Parkinsonian disorders such as Multiple System Atrophy. Sieber also manages the NINDS Morris K. Udall Centers of Excellence for Parkinson's Disease Research program. She serves as chair of the NINDS Parkinson's Disease Working Group, which coordinates and facilitates research programs and other activities related to PD within the NINDS.

David Standaert

University of Alabama at Birmingham

David Standaert, M.D., Ph.D., graduated from Harvard College in 1982. He received his master's and doctorate degrees from Washington University in St. Louis and completed a one-year internship in medicine followed by a three-year neurology residency at the University of Pennsylvania. He was appointed as a Howard Hughes Medical Institute physician research fellow, and completed a three-year research and clinical fellowship in neurology (movement disorders) at Massachusetts General Hospital (MGH) in 1995. He subsequently joined the faculty at Harvard Medical School and MGH, where he served as Director of the MGH/MIT Udall Center of Excellence in Parkinson's Disease Research.

Standaert relocated to the University of Alabama at Birmingham in July of 2006 and is now the John N. Whitaker professor and chair of the Department of Neurology. He serves as director of the Division of Movement Disorders, the director of the American Parkinson Disease Association (APDA) Center for Advanced Research at the University of Alabama (UAB), and director of the UAB Bachmann-Strauss Center for Dystonia and Parkinson Disease. He sees patients in a weekly clinic and oversees many clinical trials for new treatments of PD. He is chair of the Scientific Advisory Board of the APDA, a member of the Scientific Advisory Board of the Michael J. Fox Foundation for Parkinson Research, an associate editor of the journal *Movement Disorders*, and a member of the board of directors of the American Neurological Association.

Standaert's laboratory works on understanding both the root causes of PD as well as the origin of the disabling symptoms that appear after long term treatment of the disease. Recently, his group has focused on approaches to reducing the toxicity of synuclein in animal models of PD, and the role of neuroinflammatory reactions in disease progression.

Caroline Tanner

University of California, San Francisco

Caroline Tanner, M.D., Ph.D., runs a clinical practice specializing in movement disorders. Her research interests include investigations of descriptive epidemiology, environmental and genetic determinants, biomarkers, early detection, nonmotor disease features, and interventions for the secondary prevention, disease modification, and symptomatic treatment of movement disorders and neurodegenerative diseases. Tanner is past co-chair of the Parkinson Study Group (PSG) and has conducted numerous clinical trials with the PSG and other groups. Other research interests include work to facilitate collaborative research and improve patient access to research and clinical care, locally and internationally, including the Movement Disorders Society (MDS) Telemedicine Task Force and work to identify Parkinson's disease-associated biomarkers (Parkinson's Progression Markers Initiative, LABS-PD studies).

Tanner chairs the MDS Epidemiology Task Force, serves on the Scientific Advisory Boards of the Michael J. Fox Foundation and the National Spasmodic Dysphonia Association, and on committees for National Institutes of Health and the American Academy of Neurology (AAN). Her honors include the ANN Disorders Research Award in 2012 and the Cotzias Award of the Spanish Neurological Society in 2013.

Jamie Tucker

Parkinson's Action Network

Jamie Tucker joined the Parkinson's Action Network (PAN) in May 2013 as the senior manager of government relations. Tucker leads PAN policy work on federal appropriations, social security disability insurance, health care and Medicare access, and environmental issues related to Parkinson's disease. Previously, he was the associate director of government relations for Independent Sector, where he represented the federal tax, budget, and health care priorities of the broader nonprofit community. He received a Bachelor of Arts degree in political science and a master's in public administration from Clemson University, and is currently pursuing a J.D. from the Georgetown University Law Center with an emphasis in health care law and policy.

Jeffery Vance

University of Miami

Jeffery Vance, M.D., Ph.D., is a professor and the founding chairman of the Dr. John T. Macdonald Foundation Department of Human Genetics. He is also a professor in the Department of Neurology; director of the John P. Hussman Institute for Human Genomics Center for Genomic Education and Outreach at the University of Miami Miller School of Medicine. Vance is boarded by both the American Board of Psychiatry and Neurology and the American College of Medical Genetics. He obtained his doctorate in the Department of Medical Genetics at Indiana University and his master's at Duke University.

Vance's primary areas of expertise and national recognition are in Neurogenetics, specifically in Parkinson's disease and Charcot-Marie-Tooth (CMT) disease. His research has focused on the application of clinical, molecular, and mathematical genetic techniques to identify genes leading to human disease. Vance has identified multiple gene defects for CMT and other neurologic and inherited disorders.

Vance has also been a leader in applying genetics to common medical diseases to identify susceptibility genes. He is the primary principal investigator of the Morris K. Udall Center of Excellence for Parkinson's Disease Research at the University of Miami. Vance and his colleagues have established the first master's in genomic medicine program, earned concurrently by University of Miami medical students. He has published over 233 peer-reviewed publications and his work has been cited more than 18,000 times.

Marc Weisskopf

Harvard School of Public Health

Marc Weisskopf, Sc.D., Ph.D., is associate professor of environmental and occupational epidemiology at the Harvard School of Public Health in the departments of environmental health and epidemiology. Weisskopf received his doctorate in neuroscience from the University of California, San Francisco, and his doctorate of science in epidemiology from the Harvard School of Public Health. His neuroscience work focused on molecular and cellular aspects of neural signaling and plasticity. His epidemiological expertise and research focuses on environmental risk factors for neurological function and disease, including autism spectrum disorders, amyotrophic lateral sclerosis, Parkinson's disease, cognitive function, and psychiatric conditions. Weisskopf is also exploring the use of physiologically-based methods for assessing toxicant effects on the brain.

Allison Willis

University of Pennsylvania

Allison Willis, M.D., is an assistant professor of neurology and assistant professor of epidemiology and biostatistics at the University of Pennsylvania, a senior scholar in the Center for Clinical Epidemiology and Biostatistics, a senior fellow in the Leonard Davis Institute of Health Economics at the University of Pennsylvania, and an adjunct professor of neurology at Washington University School of Medicine. Willis received her master's from the University of Illinois in 2002, and completed residency in neurology followed by a clinical fellowship in movement disorders, and research training in spatial epidemiology and health services research methods at the Washington University School of Medicine.

Willis's research uses analytical and spatial epidemiology to examine health/care outcomes and disparities in neurological disease populations, and develop evidence-based best clinical practices for neurodegenerative diseases. Her current projects examine the impact of comorbid disease burden on treatment disparities and outcomes in Parkinson's disease, the spatial variation in medical care and medical care quality and its impact on outcome, true versus theoretical medical care access for neurological disease, and transitions in care for vulnerable neurological disease populations.

She has collaborative interests in pharmacoepidemiology in neurological disease, medical device/medical technology utilization in neurological disease populations, and comparative health services research. Willis has active grants at the National Institutes of Health, the Patient Centered Outcomes Research Institute, and is a 2014 Middleton Fellow at the University of Pennsylvania. Her work has identified key sources of health care and outcomes disparities in neurodegenerative disease, leading to shifts in neuroprotective clinical trial design and health care models for PD.

Willis is the current national chair of the Health Care Outcomes and Disparities working group in the Parkinson Study Group, the primary society for academic PD specialists. She is on the research advisory panel assembled by the National Institute of Environmental Health Sciences and National Institute of Neurological Disorders and Stroke to explore the environmental contributors and gene interplay in PD. Previous awards and honors include the Washington University Faculty Research Award, Parkinson Study Group Fellow Research Award, and Resident Teacher of the Year at Washington University School of Medicine.

Meeting Participant List

Ascherio, Alberto	Harvard School of Public Health	alberto.ascherio@channing.harvard.edu	(617) 432-0093
Babcock, Debra	National Institute of Neurological Disorders and Stroke (NINDS)	dbabcock@ninds.nih.gov	(301) 496-9964
Birnbaum, Linda	National Institute of Environmental Health Sciences (NIEHS)	birnbaum@niehs.nih.gov	(919) 541-3201
Bronstein, Jeff	Ronald Reagan UCLA Medical Center	jbronste@mednet.ucla.edu	(310) 206-9799
Chen, Honglei	NIEHS	chenh2@niehs.nih.gov	(919) 541-3782
Collman, Gwen	NIEHS	collman@niehs.nih.gov	(919) 541-4980
Elsworth, John	Yale School of Medicine	john.elsworth@yale.edu	(203) 785-6768
Farrer, Matthew	University of British Columbia	mfarrer@can.ubc.ca	(604) 822-7753
Gerbeth-Jones, Susan	Parkinson's Disease Foundation		
Hollander, Jonathan	NIEHS	jonathan.hollander@nih.gov	(919) 541-9467
Hong, Jau-Shyong	NIEHS	hong3@niehs.nih.gov	(919) 541-2358
Huang, Xuemei	Penn State Milton S. Hershey Medical Center	xuh15@psu.edu	(717) 531-1530
Johnson, Jeffrey	University of Wisconsin	jjohnson@pharmacy.wisc.edu	(608) 262-2893
Kamel, Freya	NIEHS	kamel@niehs.nih.gov	(919) 541-1581
Kane, Robert	Georgetown University	robert.l.kane29.civ@mail.mil.edu	
Kanthasamy, Anumantha	Iowa Center for Advanced Neurotoxicology	akanthas@iastate.edu	(515) 294-2516
Koroshetz, Walter	NINDS	koroshetzw@ninds.nih.gov	(301) 496-3167
Lawler, Cindy	NIEHS	lawler@niehs.nih.gov	(919) 316-4671
Lee, Michael	University of Minnesota	mkleee@umn.edu	(612) 625-8472
Mellick, George	Griffith University	g.mellick@griffith.edu.au	(07) 373-55019
Miller, Gary	Emory University	gary.miller@emory.edu	(404) 712-8582
Montine, Thomas	University of Washington (UW)	tmontine@uw.edu	(206) 731-4106
Myers, Richard	Boston University School of Medicine	rmyers@bu.edu	(617) 638-5376
Racette, Brad	Washington University in St Louis, School of Medicine	racetteb@neuro.wustl.edu	(314) 362-6908
Ritz, Beate	University of California at Los Angeles (UCLA)	britz@ucla.edu	(310) 206-7458
Sacks, Julie	American Parkinson Disease Association (APDA)	jsacks@apdaparkinson.org	(877) 223-3801
Schmidt, Peter	National Parkinson Foundation	pschmidt@parkinson.org	(305) 537-9905
Sieber, Beth-Anne	NINDS	sieberb@ninds.nih.gov	(301) 496-5751
Standaert, David	University of Alabama at Birmingham (UAB)	dstandaert@uab.edu	(205) 996-6329
Tanner, Caroline	University of California, San Francisco	caroline.tanner@ucsf.edu	(415) 379-5530
Tucker, Jamie	Parkinson's Action Network	jtucker@parkinsonsaction.org	(800) 850-4726
Vance, Jeffery	University of Miami (UM)	jvance@med.miami.edu	(305) 243-2283
Weisskopf, Marc	Harvard School of Public Health	mweissko@hsph.harvard.edu	(617) 384-8872
Willis, Allison	Perelman School of Medicine, University of Pennsylvania	allison.willis@uphs.upenn.edu	(215) 573-4983

This page left intentionally blank



**Co-sponsored by the National Institute of Environmental Health Sciences
and the National Institute of Neurological Disorders and Stroke**

111 TW Alexander Drive
Research Triangle Park, N.C. 27709

National Institutes of Health • U.S. Department of Health and Human Services